Subject: System Grounding Tweak
Posted by FredT on Sun, 17 Feb 2008 03:07:43 GMT
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I hadn't really thought about it before today, but an audio system's grounding integrity depends on the quality of the connection of the breaker box to the ground rod that's placed near it. This became an issue for me on Valentine's day when I bought my wife a new LED TV that I connected to the cable TV converter box and to my system. The immediately audible result was a ground loop hum. Removing the coax input to the cable box stopped the hum, so I knew I had a problem with the cable ground versus the electrical system's ground.A quick internet search revealed that the first and easiest fix is to connect the cable ground and the electrical system ground to the same ground rod. When I checked this out I realized they already are connected to the same ground rod, which should make a ground loop nearly impossible UNLESS THE CONNECTIONS ARE CORRODED! What do you know, the house is about ten years old, and the outside copper leads from both the breaker box and the cable TV are severely corroded where they connect to the ground rod.Pulling them and cleaning everything eliminated the hum. So even if you haven't gone to the dark side and placed an LCD TV between your speakers it might be a good idea to check your electrical system's ground and clean it if it's corroded.

Subject: Re: System Grounding Tweak
Posted by SteveBrown on Sun, 17 Feb 2008 03:55:58 GMT
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Great post, Fred, and very true! I remember back in Jr High when I got my first Ham license, reading that you should place several ground rods in a circle instead of the typical one ground rod. So I bought 2 or 3 of the things and sledged them into the earth. Not an easy task for a 14-year-old. Anyway, for those who want to improve their house ground, look at ham radio supply places for good stuff to help. And yes, the connection itself, even to one rod, is critical! Of course back then most equipment only had 2-wire cords anyway...

Subject: Re: System Grounding Tweak
Posted by Wayne Parham on Sun, 17 Feb 2008 05:23:33 GMT
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You're right, Fred. Sometimes the little ground rod that connects the phone panel and cable box up to is not all that great. Mine is decent, inserted fairly deep into the earth, but I've seen some that were practically just laying on the ground.Grounding is a big deal, especially when you connect things that are far apart. In this case, the cable distribution point is far from you and there is resistance between you and them. Even if you ground very well at the point of entry, there can still be current on the ground line because of the distance between you and the distribution point.

This makes it possible (probable) that there is a difference in potential between your local ground and ground at the source. That causes a ground loop too. For this reason, I generally find it good to isolate the grounds with a transformer, so cable ground is not connected to the ground on my system. That way cable ground is provided at their point of contact and mine is lifted, floating wherever it rests. The transformer couples the signal, and that's all I want from the cable line. Another thing that can cause fits is there are usually two different power circuits within your home. They come from two sides of a 220v feed. If you have some devices connected to one circuit and other devices on the other circuit, you'll get hum when you connect the two. Usually, wall sockets in a room are all on one circuit but not always.

Subject: If there were any truth in our language.....
Posted by colinhester on Mon, 18 Feb 2008 18:42:17 GMT
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...."ground" would be a four letter word. It seems like I'm always running in to a ground issues.....C

Subject: Re: If there were any truth in our language.....
Posted by SteveBrown on Wed, 20 Feb 2008 13:22:14 GMT
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Hey, Colin, I'd agree! Been working on a phono preamp and they can be particularly frustrating (especially without a scope here in T-town). I think one of the most frustrating issues is what to do with the power ground relative to chassis ground, and how does that relate to the rest of the grounds floating around the system? I think the old days of 2-wire cords was much easier! By the way, I learned a number of years ago that some problems can be solved by making sure all your stuff plugs into the same power strip - and/or get one of those light-up line checkers to make sure all the outlets you're using are correctly wired. I remember doing computer installations (back in the old main frame days) and it was just incredible how many outlets in commercial buildings had hot and neutral reversed, and/or missing grounds.

Subject: Re: If there were any truth in our language.....
Posted by The Irishman on Sat, 23 Feb 2008 08:51:42 GMT
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Depends on what side of the pond you're on. In the UK it is a four letter word, earth; the connection is earthing.In the US it's also four letter word with electricians who use "ground" to mean "neutral" - bond(ing) and bond (wire)

Subject: Re: If there were any truth in our language.....
Posted by colinhester on Sun, 24 Feb 2008 05:02:42 GMT
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I'm so frustrated by a ground issue on my subs, that I've just thrown my hands up. Switched amps, cables, routing, everything I can think of and still have hum. Outlet checks out (single 20 amp dedicated) that's had filtering applied (Monster and Topaz). Problem has got to between the the outlet and main (hopefully not father back)